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2018130032
Batch C

Experiment No. 8

Aim: Implementing socket programming in python.

Theory:

Socket programming[1] is a way of connecting two nodes on a network to communicate with each other. One socket(node) listens on a particular port at an IP, while other socket reaches out to the other to form a connection. Server forms the listener socket while client reaches out to the server.They are the real backbones behind web browsing. In simpler terms there is a server and a client.

Sockets are the endpoints of a bidirectional communications channel. Sockets may communicate within a process, between processes on the same machine, or between processes on different continents.

A simple server-client program[1][2] **:**

Server:
A server has a bind() method which binds it to a specific ip and port so that it can listen to incoming requests on that ip and port.A server has a listen() method which puts the server into listen mode. This allows the server to listen to incoming connections. And last a server has an accept() and close() method. The accept method initiates a connection with the client and the close method closes the connection with the client.

Client:
The **socket.connect(hosname, port)** opens a TCP connection to *hostname* on the *port*.And socket.receive() receives the TCP message.

Code:

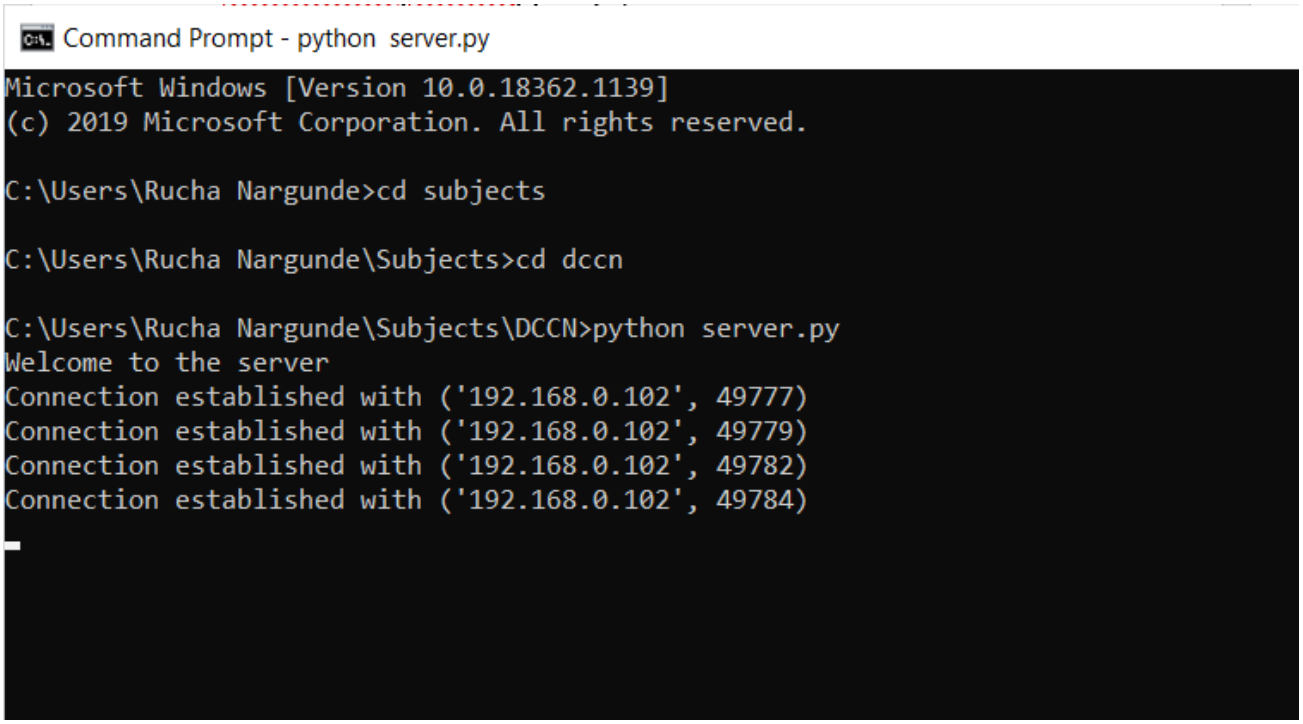
1. **Code for server.py**

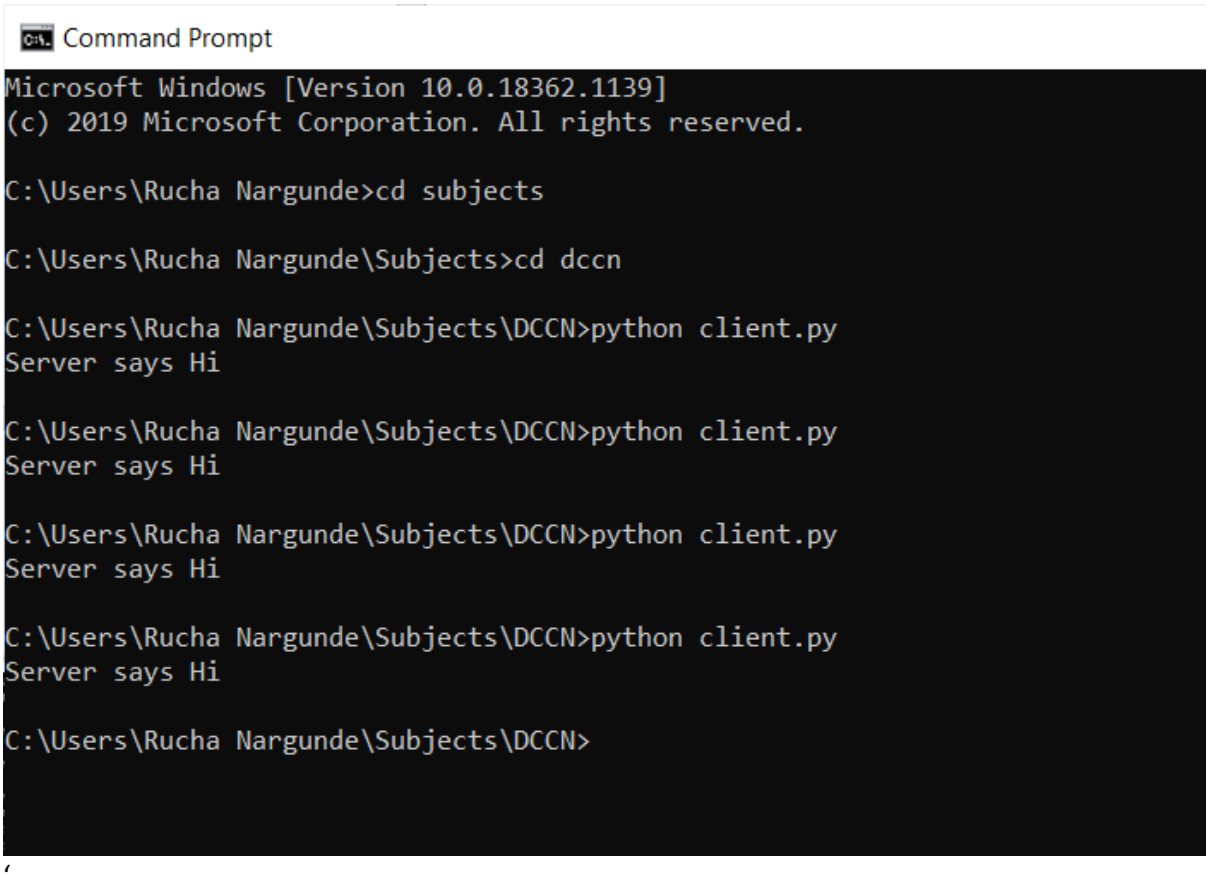
```
import socket

print('Welcome to the server')

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.bind((socket.gethostname(), 8000))
s.listen(5)

while True:
    clientsocket, address = s.accept()
    print(f'Connection established with {address}')
    clientsocket.send(bytes('Server says Hi', 'utf-
8'))
```

2. **Code for client .py**

```
import socket

s = socket.socket(socket.AF_INET, socket.SOCK_STREAM)
s.connect((socket.gethostname(), 8000))
msg = s.recv(1024)
print(msg.decode('utf-8'))
print("Client disconnected)
```

Output:


Command Prompt - python server.py
Microsoft Windows [Version 10.0.18362.1139]
(c) 2019 Microsoft Corporation. All rights reserved.
C:\Users\Rucha Nargunde>cd subjects
C:\Users\Rucha Nargunde\Subjects>cd dccn
C:\Users\Rucha Nargunde\Subjects\DCCN>python server.py
Welcome to the server
Connection established with ('192.168.0.102', 49777)
Connection established with ('192.168.0.102', 49779)
Connection established with ('192.168.0.102', 49782)
Connection established with ('192.168.0.102', 49784)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Server says Hi
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Server says Hi
C:\Users\Rucha Nargunde\Subjects\DCCN>python client.py
Server says Hi
C:\Users\Rucha Nargunde\Subjects\DCCN>

Conclusion:

Through this experiment I understood the basics of socket programming and also learned how to implement a basic client-server model in python.

References:

[1] https://www.geeksforgeeks.org/socket-programming-python/
[2] https://www.tutorialspoint.com/python/python_networking.htm